

above the channel;

a control gate formed adjacent to and insulated from the floating gate; and

an insulative layer of amorphous carburized silicon [formed] grown on the channel and located between the channel and the floating gate.

4. [Twice Amended] An integrated circuit capacitor supported by a semiconductor substrate, the capacitor comprising:

a first conductor layer supported by [the] a semiconductor substrate;

a dielectric layer of amorphous carburized silicon [formed] grown on top of the first conductor layer; and

a second conductor layer formed on top of the dielectric layer.

5. [Amended] The capacitor of claim 4 wherein at least part of the layers extend substantially vertically from a general surface of the substrate and the amorphous carburized silicon was grown on the first conductor layer in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.

20. [Amended] A memory cell comprising:
a floating gate; and
a layer of amorphous carburized silicon grown on a substrate and located between the floating gate and [a] the substrate.

21. [Amended] The memory cell of claim 20, further comprising:
a source region in the substrate;
a drain region in the substrate;
a channel region in the substrate between the source region and the drain region, the channel region being separated from the floating gate by the layer of amorphous carburized silicon; [and]
a control gate separated from the floating gate[.]; and

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

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wherein the layer of amorphous carburized silicon was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.

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[sub G1]*

24. [Amended] A transistor comprising:
a source region in a substrate;
a drain region in the substrate;
a channel region between the source region and the drain region in the substrate; and
a gate separated from the channel region by a layer of amorphous carburized silicon that was grown on the substrate.

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29. [Amended] A semiconductor device comprising:
a first conductive layer supported by a substrate;
a layer of amorphous carburized silicon grown over the first conductive layer; and
a second conductive layer over the layer of amorphous carburized silicon.

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31. [Amended] The semiconductor device of claim 29 wherein:
the first conductive layer comprises polysilicon; [and]
the second conductive layer comprises polysilicon[.]; and the layer of amorphous carburized silicon was grown over the first conductive layer in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.

32. [Amended] A memory cell comprising:
a first conductive layer supported by a substrate;
a layer of amorphous carburized silicon grown over the first conductive layer; and
a second conductive layer over the layer of amorphous carburized silicon.

35. [Amended] The memory cell of claim 32 wherein:
the first conductive layer comprises polysilicon; [and]
the second conductive layer comprises polysilicon[.]; and
the layer of amorphous carburized silicon was grown over the first conductive layer in a
microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing
gas.

36. [Amended] A capacitor comprising:
a first conductive layer supported by a substrate;
a layer of amorphous carburized silicon grown over the first conductive layer; and
a second conductive layer over the layer of amorphous carburized silicon.

38. [Twice Amended] The capacitor of claim 36 wherein:
the first conductive layer comprises polysilicon; [and]
the second conductive layer comprises polysilicon[.]; and
the layer of amorphous carburized silicon was grown over the first conductive layer in a
microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing
gas.

39. [Amended] The integrated circuit field effect transistor of claim 1, further comprising:
an n⁺-type source region in a p-type silicon substrate;
an n⁺-type drain region in the substrate;
a channel region in the substrate between the source region and the drain region; [and]
a gate isolated from the channel region by the gate insulator[.]; and
wherein the gate insulator was grown on the substrate in a microwave-plasma-enhanced
chemical vapor deposition chamber in a hydrocarbon containing gas.

40. [Amended] The integrated circuit field effect transistor of claim 1, further comprising:
an n⁺-type source region in a p-type silicon substrate;
an n⁺-type drain region in the substrate;
a channel region in the substrate between the source region and the drain region;
a floating gate isolated from the channel region by the gate insulator; [and]
a polysilicon control gate separated from the floating gate by a layer of insulating material[.]; and

wherein the gate insulator was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.

41. [Amended] The integrated circuit field effect transistor of claim 2 wherein:
the semiconductor substrate comprises a p-type silicon substrate;
the source comprises an n⁺-type source region in the substrate;
the drain comprises an n⁺-type drain region in the substrate; [and]
the channel comprises a channel region in the substrate between the source region and the drain region[.]; and

the amorphous layer of carburized silicon was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.

42. [Amended] The integrated circuit field effect transistor of claim 2 wherein:
the semiconductor substrate comprises a p-type silicon substrate;
the source comprises an n⁺-type source region in the substrate;
the drain comprises an n⁺-type drain region in the substrate;
the channel comprises a channel region in the substrate between the source region and the drain region;

the gate comprises a floating gate isolated from the channel region by the amorphous layer of carburized silicon; [and]

the amorphous layer of carburized silicon was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas; and

further comprising a polysilicon control gate separated from the floating gate by a layer of insulating material.

43. [Amended] The device of claim 3 wherein:

the semiconductor substrate comprises a p-type silicon substrate;

the source comprises an n+-type source region in the substrate;

the drain comprises an n+-type drain region in the substrate;

the channel comprises a channel region in the substrate between the source region and the drain region; [and]

the control gate comprises a polysilicon control gate separated from the floating gate by a layer of insulating material[.]; and

the layer of amorphous carburized silicon was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.

44. [Amended] The transistor of claim 24 wherein:

the substrate comprises a p-type silicon substrate;

the source region comprises an n+-type source region in the substrate; [and]

the drain region comprises an n+-type drain region in the substrate[.]; and

the layer of amorphous carburized silicon was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.

45. [Amended] A transistor comprising:

an n+-type source region in a p-type silicon substrate;

an n+-type drain region in the substrate;

a channel region in the substrate between the source region and the drain region; and

a gate separated from the channel region by a layer of amorphous carburized silicon that was grown on the substrate.

46. [Amended] A transistor comprising:
a source region in a substrate;
a drain region in the substrate;
a channel region between the source region and the drain region in the substrate; and
a floating gate separated from the channel region by a layer of amorphous carburized silicon that was grown on the substrate.

47. [Amended] The transistor of claim 46 wherein:
the substrate comprises a p-type silicon substrate;
the source region comprises an n+-type source region in the substrate;
the drain region comprises an n+-type drain region in the substrate; [and]
the layer of amorphous carburized silicon was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas; and
further comprising a polysilicon control gate separated from the floating gate by a layer of insulating material.

48. [Amended] A transistor comprising:
an n+-type source region in a p-type silicon substrate;
an n+-type drain region in the substrate;
a channel region between the source region and the drain region in the substrate;
a floating gate separated from the channel region by a layer of amorphous carburized silicon that was grown on the substrate; and
a polysilicon control gate separated from the floating gate by a layer of insulating material.

50. [Amended] A memory cell comprising:
a source region in a substrate;
a drain region in the substrate;
a channel region in the substrate between the source region and the drain region;

a floating gate;
a layer of amorphous carburized silicon grown on the substrate between the floating gate and the channel region [in the substrate]; and
a control gate separated from the floating gate.

51. [Amended] The memory cell of claim 50 wherein:
the substrate comprises a p-type silicon substrate;
the source region comprises an n⁺-type source region in the substrate;
the drain region comprises an n⁺-type drain region in the substrate; [and]
the control gate comprises a polysilicon control gate separated from the floating gate by a layer of insulating material[.]; and
the layer of amorphous carburized silicon was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.

52. [Amended] A memory cell comprising:
an n⁺-type source region in a p-type silicon substrate;
an n⁺-type drain region in the substrate;
a channel region in the substrate between the source region and the drain region;
a floating gate;
a layer of amorphous carburized silicon grown on the substrate between the floating gate and the channel region [in the substrate]; and
a polysilicon control gate separated from the floating gate by a layer of insulating material.

53. [Amended] A semiconductor device comprising:
a conductive layer supported by a substrate;
a layer of amorphous carburized silicon grown on [in contact with] the conductive layer;
and
a polysilicon layer in contact with the layer of amorphous carburized silicon.

54. [Amended] The semiconductor device of claim 53 wherein:
the conductive layer comprises polysilicon; [and]
the layer of amorphous carburized silicon was grown on the conductive layer in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas; and
the semiconductor device further comprises a source/drain diffusion in the substrate.
55. [Amended] A semiconductor device comprising:
a first polysilicon layer supported by a substrate;
a layer of amorphous carburized silicon grown on [in contact with] the first polysilicon layer; and
a second polysilicon layer in contact with the layer of amorphous carburized silicon.
56. [Amended] The semiconductor device of claim 55, further comprising:
a source/drain diffusion in the substrate[.]; and
wherein the layer of amorphous carburized silicon was grown on the first polysilicon layer in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.
57. [Amended] A memory cell comprising:
a conductive layer supported by a substrate;
a layer of amorphous carburized silicon grown on [in contact with] the conductive layer;
and
a polysilicon layer in contact with the layer of amorphous carburized silicon.

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58. [Amended] The memory cell of claim 57 wherein:
the conductive layer comprises polysilicon; [and]
the memory cell further comprises a source/drain diffusion in the substrate[.]; and
the layer of amorphous carburized silicon was grown on the conductive layer in a
microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing
gas.
59. [Amended] A memory cell comprising:
a first polysilicon layer supported by a substrate;
a layer of amorphous carburized silicon grown on [in contact with] the first polysilicon
layer; and
a second polysilicon layer in contact with the layer of amorphous carburized silicon.
60. [Amended] The memory cell of claim 59, further comprising:
a source/drain diffusion in the substrate[.]; and
wherein the layer of amorphous carburized silicon was grown on the first polysilicon
layer in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon
containing gas.
61. [Amended] A capacitor comprising:
a conductive layer supported by a substrate;
a layer of amorphous carburized silicon grown on [in contact with] the conductive layer;
and
a polysilicon layer in contact with the layer of amorphous carburized silicon.

62. [Amended] The capacitor of claim 61 wherein:
the conductive layer comprises polysilicon; [and]
the capacitor further comprises a source/drain diffusion in the substrate[.]; and
wherein the layer of amorphous carburized silicon was grown on the conductive layer in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.
63. [Amended] A capacitor comprising:
a first polysilicon layer supported by a substrate;
a layer of amorphous carburized silicon grown on [in contact with] the first polysilicon layer; and
a second polysilicon layer in contact with the layer of amorphous carburized silicon.
64. [Amended] The capacitor of claim 63, further comprising:
a source/drain diffusion in the substrate[.]; and
wherein the layer of amorphous carburized silicon was grown on the first polysilicon layer in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.

Please add the following new claims:

65. [New] The transistor of claim 45 wherein the layer of amorphous carburized silicon was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.
66. [New] The transistor of claim 48 wherein the layer of amorphous carburized silicon was grown on the substrate in a microwave-plasma-enhanced chemical vapor deposition chamber in a hydrocarbon containing gas.